

Claims

1. Pump for low flow rates comprising
 - a channel which is at least partially filled with a transport liquid (3)
 - a membrane (4, 12) at one opening of the channel that can be wetted by the transport liquid,
 - a space having an essentially constant vapour pressure of the transport liquid located at the side of the membrane opposite to the transport liquid.
2. Pump as claimed in claim 1, in which the space contains a sorbent (6, 15) which sorbs evaporated transport fluid.
3. Pump as claimed in claim 1, in which the space and the transport liquid are separated from one another by the membrane.
4. Pump as claimed in claim 2 or 3, in which the sorbent is located in a housing (7) having an opening, wherein the opening is closed by the membrane.
5. Pump as claimed in claim 3 or 4, in which the sorbent has no direct contact with the membrane.

6. Pump as claimed in claim 1, in which the space is formed by a housing (7') which exchanges evaporated transport liquid with the outer space.
7. Pump as claimed in claim 1, in which the membrane is hydrophilic.
8. Pump as claimed in claim 1, in which the membrane has a hydrophilic region facing the transport liquid and a hydrophobic region which faces the sorbent.
9. Pump as claimed in claim 8, in which the sorbent is in contact with the hydrophobic region of the membrane.
10. Pump as claimed in claim 1, which has at least one non-wettable membrane (5) which is located on a side of the wettable membrane facing away from the transport liquid.
11. Pump as claimed in claim 1, in which the channel contains a working liquid that is segmented from the transport liquid.
12. Pump as claimed in claim 1, in which the membrane is formed by an array of capillary channels.
13. Pump as claimed in claim 12, in which the capillary channels are located in a body in which the channel conveying the transport liquid is also located.

14. Pump as claimed in claim 12 or 13, in which the capillary channels are manufactured by microtechnology using etching processes, laser machining, or by stamping, injection moulding or moulding processes.
15. Pump as claimed in claim 12, in which the array comprises 3 to 100, preferably 5 to 25 capillary channels.
16. Pump as claimed in claim 12, in which the capillary channels of the array have a diameter of the individual channels in the range of 10 nm to 100 μ m.
17. Microdialysis system comprising a pump as claimed in claim 1 and a microdialysis membrane past which the transport liquid or a working liquid is transported by the pump.
18. Microdialysis system as claimed in claim 17 containing a sensor located downstream of the microdialysis membrane for the detection of one or several analytes in the transport or working liquid.
19. Ultrafiltration device comprising a pump as claimed in claim 1 and an ultrafiltration membrane through which the body fluid is drawn into the channel.
20. Ultrafiltration device as claimed in claim 19 containing a sensor located downstream of the ultrafiltration membrane for the detection of one or several analytes in the body fluid.

21. System for pumping a working liquid at a low flow rate, wherein at least one dilution reservoir (22) containing a liquid which is essentially free of substances that cannot evaporate at the membrane, is located between the fluid system in which the working liquid is located and a pump as claimed in claim 1.
22. System as claimed in claim 21, in which two or more reservoirs that are connected to one another (22¹, 22², 22³, 22⁴, 22⁵, 22⁶, 22⁷, 22⁸) which form a dilution cascade are arranged between the fluid system containing the working liquid and the pump.